

The  
**COUNTERFEITING**  
of **GEMS**

BY

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# The Counterfeiting of Gems, etc.

BY

BRISTOW J. TULLY, F.G.S., F.Z.S.

*Late Lecturer on Precious Stones to the L.C.C. & N.A.G., etc.*

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WE live in an age of counterfeits! Pausing to consider for a moment the enormous amount of artificial products of various kinds now made and sold, due to the continual discoveries, through scientific research and the artifice of ingenious inventors, one begins to wonder where it will all end, and whether the future will be altogether, in some respects at least, an ideal state, or if one will not at every turn have to consult experts as to the genuineness or not of respective commodities.

From artificial "silk," chemical "foods," synthetic "rubber" and "dyes," scientific "leather," and a host of other things, with the vast possibilities they portend, one passes to synthetic, artificial, and imitation replicas of the more valuable and popular precious varieties of gems and pearls. These latter, with more or less analogous names given them calculated to deceive the unwary, and the knowledge of the great increase in the variety and quantity of this principally foreign class of goods in the last year or so, coupled with the maxim that "Forewarned

is forearmed," has prompted me to write this little booklet.

I do not presume in any way to offer the following remarks as being of a scientific nature, neither is there scope to fully explain the use of several useful instruments, such as the Dichroscope, Refractometer, etc., used in the accurate determining of gems, but sincerely hope that the few *practical* hints contained on the detection of the various counterfeits of gems without the aid of expensive apparatus may prove of use to some of my many friends and fellow-craftsmen in the trade, who may possibly be offered one or other of these clever reproductions, and who might otherwise, perhaps, not discover until too late their spurious character.

Before proceeding to enumerate the various reproductions, it would perhaps be as well, first of all, to clearly describe the correct nomenclature of the several processes employed, as there is still a general "looseness" in the terms used.

The old and original method of reconstructing rubies by fusing small and useless stones into valuable gems has been, for the past thirty-five years, entirely abandoned, and the word is obsolete.

The "reconstructed" stones were introduced in large quantities under the title of "Geneva Rubies" until the method of their production became apparent, and were entirely eclipsed in 1904 by the Synthetic Rubies introduced by Professor Verneuil, of Paris, although the old name of "reconstructed" was, and is still, erroneously given them.

Synthetic, that is, a compound body "built up from its constituent elements," is thus the correct term to apply to these productions made

in great quantities by the use of the oxy-hydrogen blowpipe.

The words "Artificial" and "Imitation" are again frequently used indiscriminately, and here I would explain that while the former is a collective term indicative of productions possessing the same chemical compositions and physical characteristics (except in minute details) as the genuine stones they simulate, the latter applies only to copies in a *base* material, such as paste or glass, etc.

In the detecting of counterfeit gems the assistance of a *really good* magnifying glass is absolutely essential, as it is entirely a matter of internal structure that indicates their genuineness or otherwise.

A good watchmaker's eyeglass, consisting of TWO LENSES giving a half-inch focus, or a Codington pocket lens of 1-inch focus magnifying about ten diameters, obtainable at any reputable optician's, or other modern pocket lens giving about the same magnification, are all that is necessary for all practical purposes. The ordinary 1-inch to 2-inch watchmaker's eyeglass is not strong enough to detect the inclusions I shall later describe, and may lead to imperfect or wrong conclusions.

From the monetary point of view, to those members of the trade who are interested in this little booklet, I propose dealing firstly with those counterfeits which are made to simulate the most valuable varieties of our coloured precious stones, viz., the Ruby, Sapphire, and Emerald, as it is in these that occasionally the biggest shocks occur.

THE UBIQUITOUS SYNTHETIC RUBY AND SAPPHIRE are not only employed in the

manufacture of cheap articles of jewellery, but fine examples even of large size have a habit of cropping up in the most unexpected high-class platinum-mounted articles, and are likely to give one a nasty jar if offered for sale and not detected before purchase.

There are many shops on the Continent and in England which for years have quite legitimately and openly made a special feature of artistically mounting first-class synthetic and other "gems" in conjunction with genuine diamonds in platinum, or platinum and gold, and sold them as such. Thus very important-looking ornaments are produced capable of being sold at a much cheaper figure than if the chief feature—the coloured stone centre, etc.—were genuine. So long as the articles remain in private hands all well and good; but, as *very* often happens, they are given from one to another as presents, ultimately, perhaps, being offered for sale or exchange, or left for remounting, then the "band begins to play" for the unsuspecting jeweller, who may be misled by the high class of the mounting, etc. The onus of probably having to subsequently explain the nature of the counterfeit, or being accused of changing the stone by a none too scrupulous client, is not pleasant!

Tens of thousands of carats of these stones are in circulation, many, I am afraid, in the stocks of perfectly innocent and reputable merchants, while a great number are to be "discovered" in what appear as "bargains" in the hands of itinerant vendors.

As is probably by now well known, the Synthetic Ruby and Sapphire are made by allowing finely-powdered ammonium alum, plus

a small percentage of chrome alum for Rubies, or titanium oxide for Sapphires, to gently fall down by the regular tapping of a small hammer upon a container through the central tube of an inverted oxy-hydrogen blowpipe on to a fireclay stem.

The powder is decomposed by the flame into pure alumina, which is precisely the same substance that nature uses to make the genuine stones in her "laboratory," small globules forming drip, very much like treacle off a spoon, and gradually build up a pegtop-shaped mass or *boule*, as it is termed, point downwards.



As the mass forms, the liquid arranges itself in concentric rings, gradually enlarging in area as the boule grows in size. This, upon cooling, frequently splits along its principal axis into two halves, like a pear that has been divided by a knife.

It is obvious, therefore, that although these boules are formed in a quite unnatural manner, they are, however, composed of precisely the same chemical composition as the real stone they represent. Moreover, strange to say, they exhibit exactly the same *physical* and *optical* characteristics as well, and therefore cannot be detected

from the genuine stone by usual tests of hardness, density, refractive index, etc.

THE ONLY ACCURATE TEST, therefore, is in examining their structure very carefully with the aid of your lens. To obtain the best and clearest result, spread a sheet of ordinary plain white, or blotting paper on a table in a good light and look into the stone, the paper forming a plain diffused reflector of an even light through the stone.

As previously explained, the melted material falling on the stem drop by drop gradually spreads out, but the colouring oxide, which is not completely homogeneous with the alumina when the liquid drop falls and spreads out, is deposited in a series of concentric rings, those of one drop sometimes being parallel to those of another, sometimes not.

This concentric deposition of the colouring matter (the alumina being, of course, invisible) continues throughout the entire boule, and forms the most valuable aid in determining them.

Now it is obvious that, should the stone be cut one way of the rough boule, *i.e.*, the table and back in a line with the pegtop mass from top to bottom, the concentric (or if cut from a boule that has split in half) or semicircular lines will be *apparent* from the *front* or *back* of the resulting cut stone (Figs. 1 and 2); while if cut with its table parallel to the split surface of the divided boule, they will appear perfectly straight when viewed through the front of the stone, and consequently to detect them, the stone must be viewed through the side (Figs. 3 and 4).



FIG. 1.

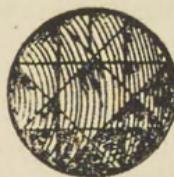


FIG. 2.



FIG. 3.

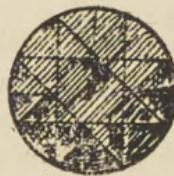


FIG. 4.

In all synthetic gems these semicircular lines are *always* present. They *must* be, from the method of their formation, but may try the patience of the finder to detect.

As, however, the manufacturers discard the most obviously marked stones even after cutting, they are often very difficult to determine, and one must not jump to the conclusion that they always "shout" at you when a stone is casually viewed through the "table," as many charts would lead one to imagine.

ALL REAL SAPPHIRES AND RUBIES grow by the gradual accumulation of mineral matter in regular even layers on their crystal faces, which faces are always flat. Consequently, these layers are always *straight*, from whichever position they may be viewed. Occasionally they form an angle with two sets of straight layers corresponding with the two or more faces of the crystal.

The colouring matter in the real gems often varies in intensity in these succeeding layers, giving rise to straight lines of varying colour, and are frequently visible in the genuine stones; but these zones or lines are *always parallel* to each other, and always perfectly straight.

#### " BUBBLES "

may, or may not, always be in evidence, but when they are, and of a perfectly spherical or balloon shape, they form a second absolutely (as also in paste imitations) determining factor as to the stone's counterfeit origin.

They are caused by some of the unescaped gases being forced into the treacly mass as it is built up, and, being under pressure, assume a perfectly round or pippin shape, like the escaping gases from aerated waters. Genuine Sapphires or Rubies do occasionally exhibit hollow cavities or contain small inclusions of some foreign bodies, but are always more or less angular or irregular; never round and perfectly empty.

Care should be exercised, therefore, that when a cavity is seen in a gem, to observe the character and shape of it, and not to assume that a hollow of any kind denotes a forgery.

Should the stone be of an important size, and cannot be satisfactorily detected in the setting, it will pay to have it unset, to enable a better view to be obtained from all sides. Should any difficulty be then experienced, immersing it in water or linseed-oil in a shallow vessel with opaque sides, such as an eggcup, will often greatly facilitate to bring into view the colour zones, etc.

The presence of SILK, the little white sheen patches or streaks observed in some Sapphires

and Rubies, is definite evidence of genuineness, as this is a phenomena produced during natural growth, and cannot be produced in the hurried molten process of the blowpipe.

#### SYNTHETIC SPINELS,

both in all shades of red and blue, are produced artificially by exactly the same process as the Ruby and Sapphire, simply by the addition of the necessary amount of magnesia to the alumina, but the same remarks as to identification of these stones apply. The so-called

#### SYNTHETIC ALEXANDRITE

is, in reality, a Synthetic Spinel which, owing to the peculiar nature of the colouring matter (cobalt) employed with the magnesium, which is used as a flux to assist the colour to unite with the alumina, exhibits the characteristic twin colours—bottle-green by day and raspberry-red by artificial light—of the genuine Chrysoberyl Alexandrite. The fact that real stones of this variety are seldom found of small size suitable for rings, etc., gave many opportunities for small lots, and even individual stones of apparently good quality, to surreptitiously creep on to the market, and were greedily snapped up, until their spurious nature was revealed.

The practical test for these, however, is like the Spinels, the same as for the Rubies, their structure being concentric and also often exhibiting bubbles.

It may be remarked that I have not commented on the, in many cases, quite artificial glassy colour shown by many Synthetic Rubies and Sapphires which, to the well-trained eye, is perhaps sufficient in itself to proclaim their character, but as the ideal or “perfection”

colour in the genuine stone often varies to a certain degree according to the individual taste of the buyer, and the fact that in the latest and best synthetic products the true shades of colour are so exactly reproduced, to place any reliance on casual comparison of colour is extremely risky, and of absolutely no practical value at all in *making sure* of a stone's identity.

### THE SOUDÉ EMERALD.

This exceedingly ingenious and clever *fake* is often erroneously called "Synthetic" or "Scientific," but it is neither one thing nor the other, being simply a "triplet" composed of two parts rock crystal and one part green gelatine cemented together by great pressure. When the edge is concealed by a closed-in setting, such as a "mill grain," "cut-down" collet, gipsy, or other style, it is a regular "twister to diagnose."

Experiments have been made for years to reproduce Emeralds having the same natural features as the genuine stone in the similar manner that the Synthetic Rubies and Sapphires do, but owing to the fact that a large percentage of another chemical ingredient, called silica, has to be mixed with the alumina to form the correct composition, these experiments have always proved a failure; the reason being that the silicate, after melting, is always of a glassy nature, and does not therefore show the same optical properties as the real stones.

It is well known that one of the chief peculiarities of Emeralds is the almost inevitable presence, even in fine stones, of "feathers," striæ, and minute cracks, the causes of which are too voluminous to enter into here, and as to reproduce these natural marks in glass is

exceedingly difficult, and the consequent softness of glass would betray them, ingenious man has added to the cares of the unfortunate jeweller by taking two slabs of rock crystal, one slab used for the underside of the "stone" twice the thickness of the top, *containing natural feathers, striæ, etc.*, and cementing them together by an insoluble, transparent substance, with an extremely thin sheet of emerald green gelatine between, like a sandwich.

This triple slab is then slit into rectangular pieces of the sizes required, and then cut and polished, the resulting stones appearing of a beautiful emerald green throughout, owing to internal reflection from the green layer.

The rock crystal, being of approximately the same hardness and density as the Emerald, a file or other test for hardness, etc., will not avail; also the natural imperfections seen in the finished cut stone add *false evidence* to its apparent genuineness.

THE INFALLIBLE TEST for these clever fakes (likewise for all DOUBLETS, that is, any coloured, transparent stone composed of a real stone front with a deeper coloured glass back cemented on to *improve* the colour, occasionally met with in antique jewellery), if there is the slightest doubt about its authenticity, is to have them removed from their settings and then immerse them in an eggcup of water by a pair of corn-tongs.

If they are Soudé, the colourless top and bottom, with the thin green centre layer, will immediately become apparent as they are turned about in the water, and prove their spurious nature. In the case of doublets, the difference

in tint of the top and bottom halves will instantly be observed.

Any vessel such as an eggcup or galleypot, will answer the purpose, so long as it has opaque sides, and the light can only reach the stone under examination from the top.

This simple and absolutely determinative test is of great use also should a genuine stone, such as a Ceylon Sapphire, for instance, improve by recutting, as by holding it in an eggcup of water the locality where the deepest part of the colour lies becomes obvious, and perhaps in a badly-shaped native cut stone might be cut away; the writer having seen several glaring instances of this, the resulting stones being several shades lighter, and in two instances quite spoilt.

#### SCIENTIFIC AQUAMARINES.

Owing to the discovery in recent years of large quantities of beautiful pale blue Aquamarines, and also that fickle jade, Dame Fashion, condescendingly issuing a mandate that they should be "the vogue," two imitations have crept into the market simulating these charming and delicate gems.

The first and most important is the Synthetic (so-called) blue Aqua, which in reality is nothing more nor less chemically, physically, and optically, than a Synthetic Sapphire, only the colouring matter is slightly different. The same difficulty presenting itself, owing to the large percentage of silica in the true Aquamarine, as in the Emerald, they therefore cannot so far be scientifically made.

From a practical standpoint therefore, as the average jeweller cannot be expected to be

able to ascertain relative densities, hardness, and optical characteristics without the aid of requisite apparatus, the trusty pocket lens will disclose (if synthetic) concentric lines as in the Synthetic Sapphire or Ruby, also very probably minute bubbles ; whereas in the genuine Aquamarine these, as in all true stones, are always straight.

The second counterfeit is a brilliant pale blue glass which, when well cut, is a very passable imitation indeed. When compared side by side, however, with the real gem, a certain crudeness and glassiness of colour is manifest, which some may memorise ; but although the hardness is much less than the true stone, and can be easily touched by a file on the setting edge, our old trusty friend the lens quickly reveals the *wavy flow structure* of glass so characteristic of all paste gems.

#### SYNTHETIC DIAMONDS.

It is perhaps quite unnecessary to more than remark that although diamonds have actually been produced scientifically by man, they were, and it is to be hoped always will be, of nothing more than scientific interest, the resulting stones being of such microscopical size as to require a high-power microscope to see them and determine their nature. The recent report, emanating from Germany, of the discovery (by the reputed aid of high explosive) of producing diamonds of commercial size at approximately two-thirds market prices is remarkable, and although several parcels are stated to be in the market at the time of writing I have been unable to obtain any for examination.

A very artful fraud was attempted some years ago by a number of pure white, Synthetic

Sapphires being offered as Synthetic Diamonds "possessing 90 per cent. of the characteristics of the true stone," but was very quickly found out and suppressed.

WHITE JARGOONS (that is, reddish-brown Zircons decolorized by heat, being exceedingly brilliant when the "baking" is successful) are sometimes used to simulate Diamonds, and are exceedingly brilliant, and owing to their high dispersive powers on light, are much better substitutes than the Synthetic white Sapphire.

Their lack of "fire," owing to their lustre being glassy and not adamantine, as in the case of the Diamond, is a ready test to distinguish them, especially when breathed upon, the resulting film of condensed moisture being pure dead white, and not "steely," as in the true Diamond.

#### TURQUOISE.

For many years several imitations of this stone have been on the market, and are more or less well known (such as French "remade" turquoise, stained chalcedony and pastes), but during the last two or three years an exceedingly clever counterfeit of Turquoise, showing the matrix, has been imported from China in the form of bead necklaces, carved amulets, charms and bangles, etc.

An earthenware paste of an exact turquoise blue shade is moulded into beads, hole complete, or into carved amulets or charms showing the figures of animals, fruit, etc., in high relief. A brownish-black material in powdered form is then obviously very deftly worked into the still moist paste in patches and streaks resembling the natural stone. The fake matrix markings are only superficial, as a broken bead will reveal,

the mass being quite "clean" throughout. They are then, no doubt, baked like china ornaments, and afterwards the various carvings of scrolls, figures, etc., touched up, and the finer line-work put on.

They are then glazed with a siliceous glaze, and again baked like a china cup, etc.

This glaze has the double advantage of putting on the necessary apparent polish in and around all the carving crevices, holes, etc., improving the colour, and also forming a hard skin over the ornament of approximately the same hardness as the real turquoise.

To distinguish them from the real is not easy, unless perhaps the article is a necklace, when a small bead can be taken and broken in half by a tap with a hammer; the hole will be found to be glazed all through, and if breathed upon, will smell distinctly *earthy*, and any matrix markings present will be found to be only skin-deep.

These three features in themselves are conclusive evidence of counterfeit, as there would be no possible benefit in *polishing* the stringing hole of an opaque bead, even if it could be done. Turquoise, when broken, does not smell clayey or earthy at all; moreover, the matrix is intimately connected with the turquoise throughout.

In carved ornaments the general evenness of quality and size is often suspicious, while the character of supposed polish in the smaller, deep scroll-work is much more brilliant than the main body, and under the glass is obviously of a *varnish* nature, caused by dipping in the transparent glaze, and occasionally shows frothiness from baking, more especially in some of the smaller deep crevices and holes.

## LAPIS LAZULI.

The great popularity of this rich-coloured gem, particularly in the form of bead necklaces, has, owing to the scarcity of really fine quality material, led recently to the appearance of several counterfeits. The real Lapis occurs in extremely fine grain compact masses, generally flecked in places with minute yellow metallic specks of iron pyrites. It is mostly found in Afghanistan, and is sent both to Persia and Russia; hence the names given to the finest quality are merely places of market, and not of origin, although the mineral does occur in small quantities in various parts of Siberia. When examined with a lens, it is quite obvious that it is not a homogeneous mineral like diamond, ruby, etc., but is of a fine granular structure, the body being composed of a whitish material, while the grains constitute the blue pigment ultramarine.

The greater the abundance of the pigment granules, and the more even the distribution, the finer the quality and colour. Patches of the white body material or shading in colour relegates it at once to second quality, and is not so much esteemed. Large quantities come from Chili, but are much paler in colour than the Persian or Russian, and much flecked with white, and taking a very poor polish, are only considered of very third-rate quality.

Apart from the granular structure seen by the lens, a drop of aquafortis placed on any true Lapis will show effervescence, owing to the decomposition of the body mass; no counterfeit either shows this reaction, the granular structure or the minute yellow flecks of metallic iron pyrites. Berlin-blue stained agate and jasper has for many years been sold as German Lapis

or False Lapis, and during the last year or so, owing to the demands of fashion, a great many necklaces, etc., of this material have found their way on to the market. Their general crudeness of colour, mottled character of structure (as distinct from the fine granular), owing to the unevenness of staining due to varying degrees of porosity throughout the jasper, together with a total absence of any metallic specks and a higher degree of polish, at once proclaim their false nature.

What purported to be an exceedingly fine quality Russian Lapis necklace was recently shown to the writer, which upon careful examination turned out to be translucent alabaster beads coated with a finely granular substance closely resembling true Lapis. The fact that the quality was so superbly fine, and also that there were several all equally good, gave grounds for suspicion. Upon examining carefully with a lens and testing round the stringing hole with a pin-point, when the lacquer scraped off, their counterfeit character became apparent.

Another good imitation is produced by fine granular blue paste containing yellow iron pyrites specks not too highly polished to simulate Russian Lapis. This, however, is quickly determined by holding up in front of a strong light, when the faint translucency of the paste is observable, whereas all true Lapis is *perfectly opaque*.

#### OPALS.

Although it may not strike one at first, owing to the plentiful supply of this gem, to be worth anyone's ingenuity to fake this stone, nevertheless, in consequence of the vogue in recent years of the Black Opal, two kinds are on the

market, and occasionally met with. The first is the Doublet, and the second the Triplet, *i.e.*, two or three pieces joined at their setting edge.

It is no doubt familiar that in many cases precious opal is only a skin, as it were, on a more or less impure milky-grey or blackish matrix back.

If the skin shows good flashes of colour, and the stone happens to be of the white or grey variety, by carefully slitting the milky-grey back off, a beautiful black opal may be produced by cementing it to an almost opaque black opal matrix.

Again, as red flashes appear to be greatly esteemed in black opal, a thin red gelatine is sandwiched in between, with an opal back of poorer quality, the resulting triplet showing a beautiful play of colours, red predominating.

Quite recently triplets composed of two parts opal, with an exceedingly thin layer of black onyx, or other material, have been offered for sale, emanating from that centre of fake stones, Idar.

When these stones are mounted, the front appears fine quality black opal, the back also natural opal, and, of course, no suspicion is aroused, but upon unsetting and examining the girdle or setting edge with a lens carefully, its composite formation is revealed.

#### "PASTES" OR "STRASS."

The production of glass *imitation* gems dates back to the very earliest Roman times, and no doubt those early glass-makers turned their skill to no mean financial advantage on the ignorant parvenus and impecunious gentry of those days,

as their beautiful colour was their chief asset, and the means of identification non-existent.

Strasser, of Vienna, gave great attention to the careful production of imitation gems in high refractive brilliant glass, free from bubbles, with great success; hence the name "Strass," although the name "paste" (from the Italian "pasta," meaning dough from the early white paste, moulded and cemented on coloured glass plaques to simulate onyx cameos) is still commonly given to all glass imitations.

Although, of course, there are several ways of easily detecting these from the genuine stones they represent by means of proper instruments and tables, the object of this little work is only to assist by those aids which are to hand, viz., the invaluable pocket lens.

Firstly, all pastes or strass are much softer than any genuine stone, and can be *easily* scratched by a file judiciously applied to the setting edge.

Secondly, by a careful examination of the interior of all glass imitations, a characteristic *wavy flow structure* will always be observed, whereas in that of every genuine stone the layers of growth are *always* perfectly straight, or a series of two straight lines meeting at an angle.

Thirdly, the presence of minute bubbles, especially in many of the glass imitations of the present fashionable jade and other fancy stone bead necklaces, also the glassy "warmness" compared with the icy coldness of all natural stones when touched by the lips.

These three factors are in themselves quite definite evidence of identity, and one need not resort to the aid of more elaborate tests to confirm them.

## PEARLS.

### JAPANESE CULTURED AND IMITATION.

Pearls, like their sister gems of mineral origin, have from early times been counterfeited, and some of the more recent products are of very perfect and beautiful appearance.

As early as 1656, Jacquin, a Parisian, discovered a means whereby the beautiful pearly lustre of genuine pearls was reproduced, and his methods, with certain modifications, are still employed. The commonest variety of imitation pearls are spheres of "girasol"—a colourless glass—used for the express purpose and blown to any desired shape, such as beads, drops, or baroques; the inner surface is then coated through the holes with a silvery white varnish obtained from the underside of the scales of the bleak, one pound of the substance requiring the scales from 18,000 to 20,000 fishes.

The material is technically known as Essence d'Orient. When dry, the beads, drops, etc., are filled with hard paraffin-wax, to give strength and weight.

Apart from the glassy appearance, to the trained eye these can be easily detected by a careful examination of the stringing hole where the finish of the glass exterior is apparent; also, digging inside with a fine needle will soon disclose the wax filling.

The fragile character of these filled glass spheres soon led to the production of "solid" imitations, consisting of solid beads or drops, of opaline glass coated with a mixture of Essence d'Orient, a resinous lacquer, afterwards treated by acid, producing an almost exact reproduction of genuine fine Indian pearls.

These, upon casual inspection, are difficult to detect, especially if mixed in a necklace with real pearls of equal brightness; but with the aid of an ordinary pin, pin-points can be easily pricked anywhere upon the resinous lacquer.

The glass will quickly detect their nature (the surface is generally bubbly and uneven, and the pin-prick depression will show distinctly), as, of course, any genuine pearl is much too hard to be pricked by a pin.

The "feel" also, when passed across the edge of the teeth, is distinctly waxy, whereas a real pearl feels hard, like vulcanite; in fact, almost like stone.

The beautiful products known as the "Cultured Pearls," although hardly to be described as counterfeit or imitation, being in part due to the natural effort of the fish, are the result of an artificial stimulus given to a certain variety of oyster, carefully guarded in secluded "nurseries" in certain districts in Japan, in the form of mother-of-pearl three-quarter beads, or buttons, introduced into the fish during growth.

The oyster, in endeavouring to obtain relief from the irritating foreign body, varnishes it over, as it were, with several coats of the natural pearly nacre. After a certain period, these treated oysters are again collected, opened, and the pearls carefully cut from the shells, to which they have become cemented by the nacreous substance. A tiny, partly spherical mother-of-pearl back is then skilfully pegged and cemented to the two-thirds or three-quarter button, as the case may be, and the cultured pearls are then polished up and completed ready for the market.  
*(See illustration.)*



Although described as true pearls, it is obvious that, despite what their quality and lustre may be on the surface, they are nevertheless composed of from 50 per cent. to 60 per cent. base material, and are not built up of concentric layers of nacre *throughout*, like all genuine pearls, and however beautiful, their intrinsic value is comparatively small.

From the brief description above, the means of identification is, of course, the back, where the line of demarcation between the nacreous pearly front and the small mother-of-pearl back is always visible. When skilfully mounted in cluster rings or other ornaments, and the backs well concealed by a finely pierced or engraved cup, they are difficult to detect from the front. Therefore, as I have known several instances of finding out too late, if in doubt, warm the pegs and *take them off*.

*The Jap WHOLE Cultured or FORCED* Pearls are now, and have been for some time, an accomplished fact, as the recent scare in the daily press has widely made known. The stimulus, or core, is the same substance as in the ordinary Jap bouton, *i.e.*, mother-of-pearl; but in this instance the bead is perfectly spherical, and is introduced by surgical means into the soft integuments of the fish, thereupon becoming enveloped with a nacreous envelope. If the efforts of the oyster are (from the culturer's point of

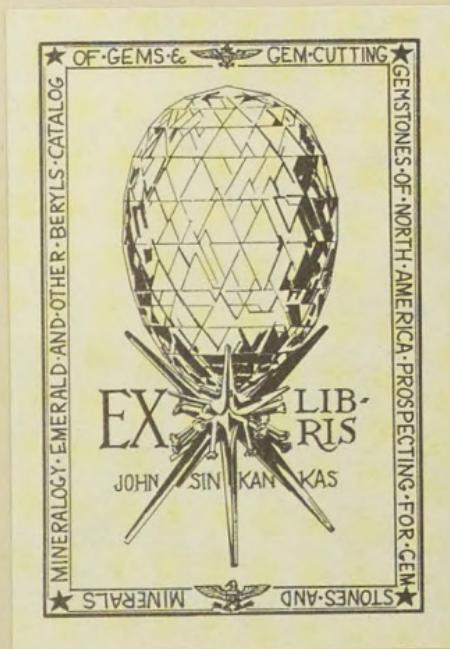
view) successful, the resulting product is a completely spherical necklace pearl; but many are irregular baroque, or bouton, in outline, or covered with a poor quality nacre.

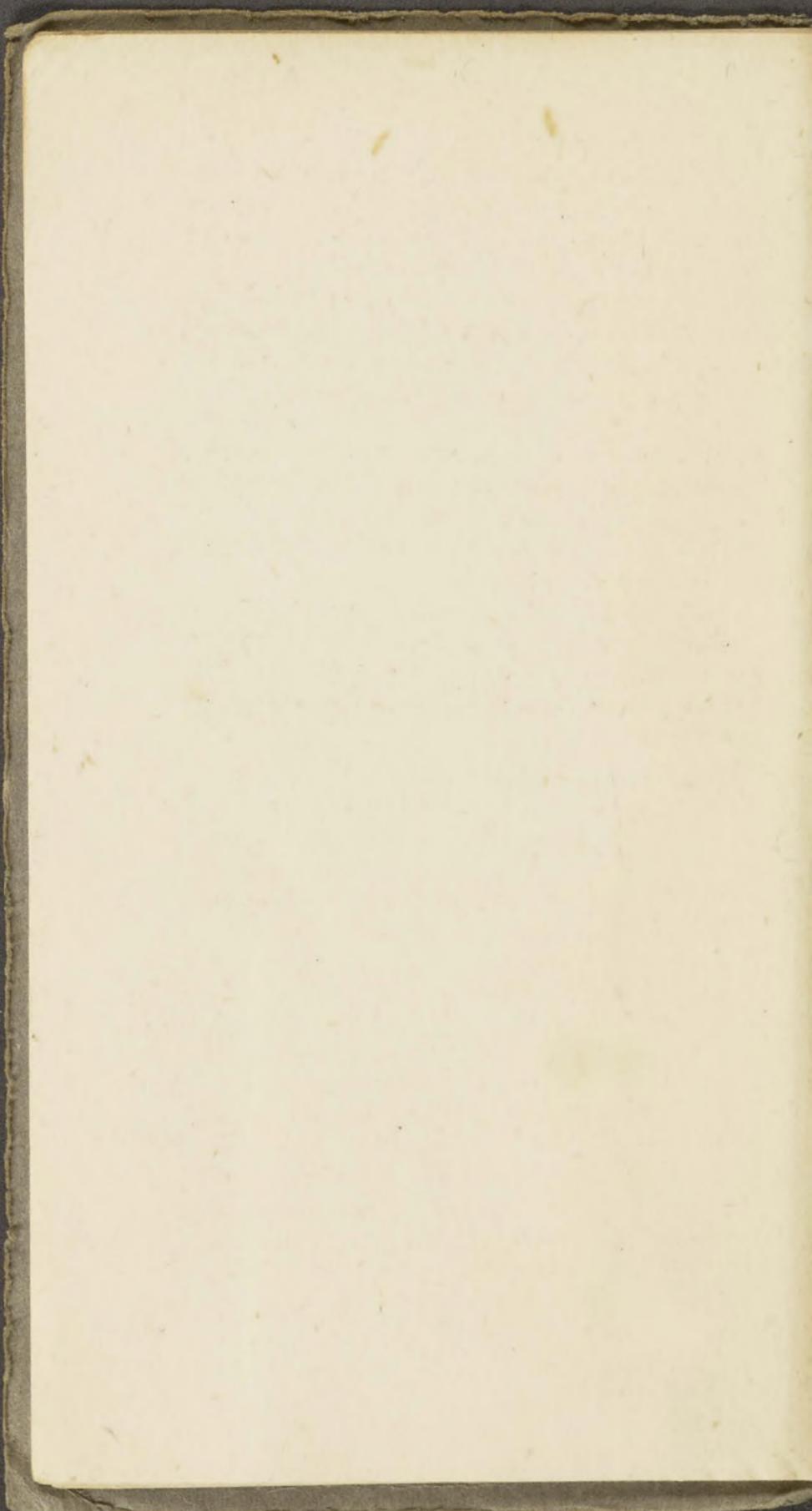
The X-rays, specific gravity, or microscopic tests, fail entirely to definitely distinguish them from the genuine natural whole pearl; but the author is pleased to state that, after exhaustive trials, he has discovered a special process by which the core is at once visible, the size being easily determinable, and the thickness of the envelope surrounding it, so that in future it is to be hoped no further anxiety need be felt as to their identification.

The author of this little brochure will be pleased at any time to more fully explain to, or assist, any members of the trade who may desire assistance on any technical point referring to above.

16, GT. MARLBOROUGH STREET,  
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*June, 1921.*





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